



# **Light-Duty Vehicle Forecast: 2021 IEPR**

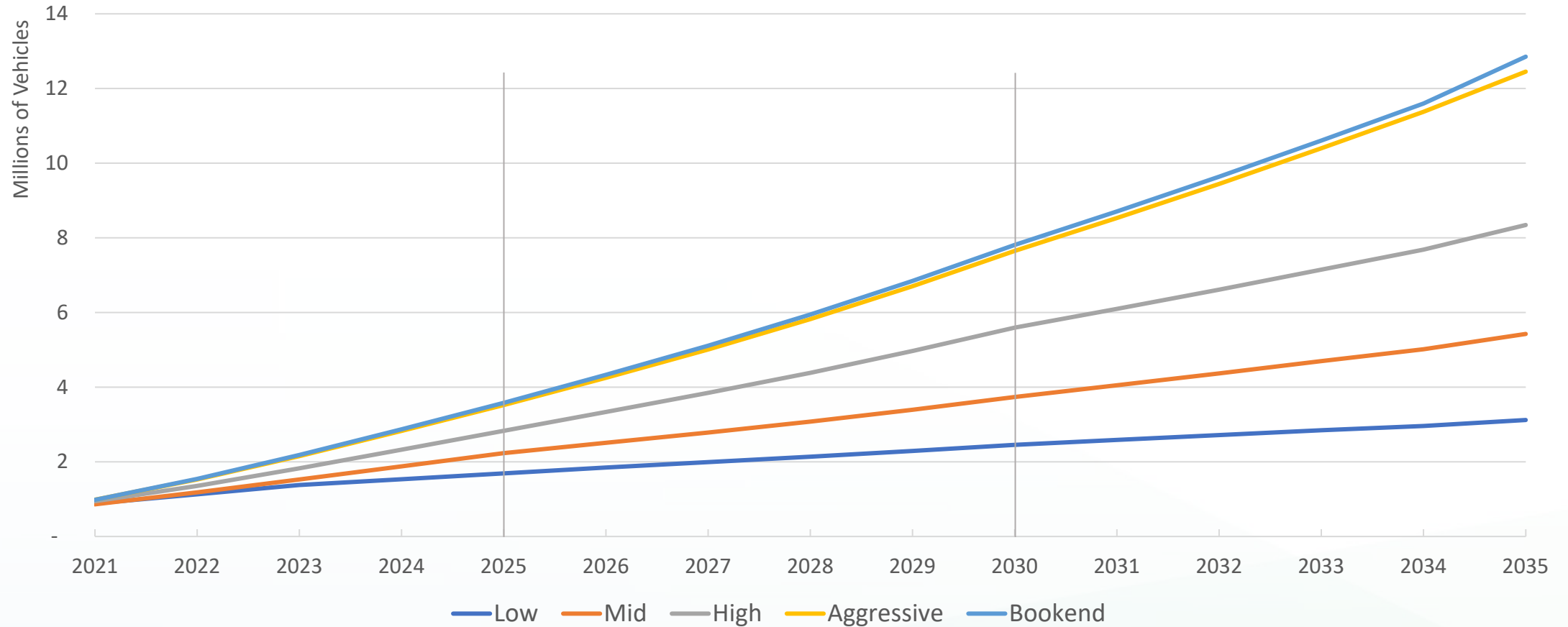
**December 2, 2021**



# 2021 Light Duty ZEV Forecast Scenarios

	Low	Mid	High	Aggressive	Bookend
<b>Consumers' PEV Preference</b>	Constant at 2017 Level	Increase with PEV market growth	Increase with PEV market growth	Increase with PEV market growth	Increase with PEV market growth
<b>Federal Tax Credit</b>	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019
<b>Clean Fuel Rewards</b>	2030	2030	2035	2035	2035
<b>State Rebate</b>	To 2023	To 2025	BEV & FCV To 2030	BEV & FCV To 2035	BEV, PHEV & FCV To 2035
<b>HOV Lane Access</b>	To 2023	To 2025	BEV & FCV to 2030	BEV & FCV to 2030	BEV & FCV to 2030
<b>Availability of PEVs (in 2035)</b>	ZEV models available in <b>14</b> of 15 CEC LDV classes	ZEV models available in <b>15</b> of 15 CEC LDV classes	ZEV models available in <b>15</b> of 15 CEC LDV classes	ZEV models available in <b>15</b> of 15 CEC LDV classes	ZEV models available in <b>15</b> of 15 CEC LDV classes
<b>PEV Cost Component / Battery Price (2035)</b>	~\$93/kWh	~\$69/kWh	~\$46/kWh	~\$32/kWh	~\$32/kWh
<b>BEV Max. Range</b>	~255 miles	~300 miles for Standard, 350 Premium	~400 miles for Standard, 450 for premium	~400 miles for Standard, 450 for premium	~450 miles for Standard, 500 for premium
<b>Refuel Time (2030)</b>	15 -21 min	15 -21 min	10-16 min	10-16 min	10-16 min
<b>Time to Station (2030)</b>	7-8 min	Same as gasoline	Same as gasoline	Same as gasoline	Same as gasoline

# Total Light-Duty ZEV Stock



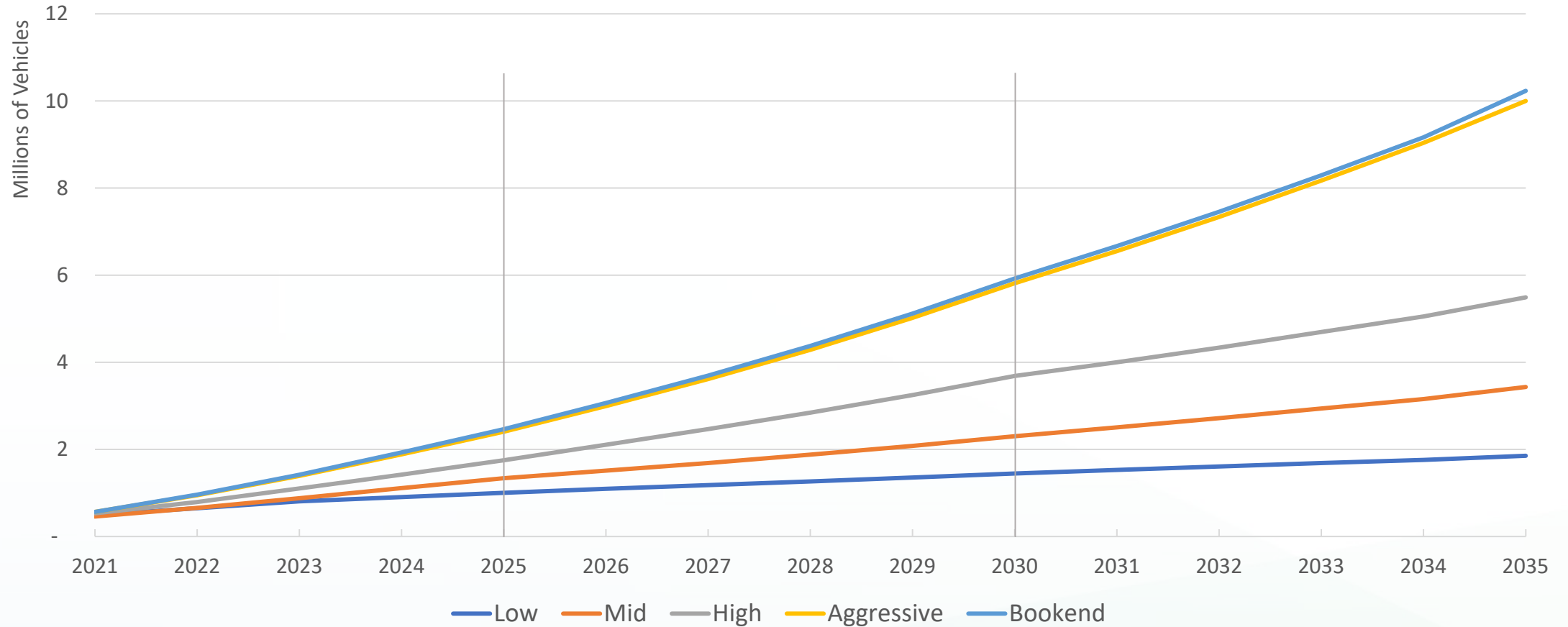
Source: CEC Staff.



# Policy Marker Year ZEV Population (Millions)

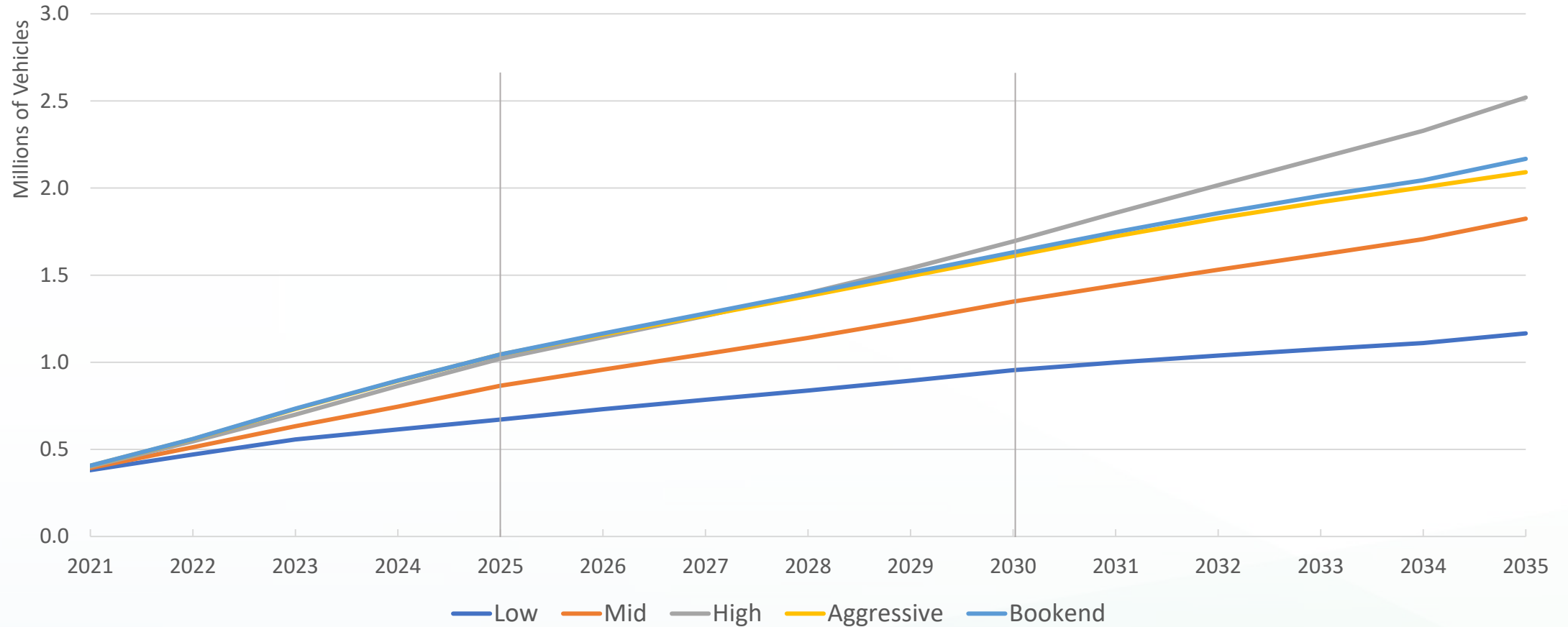
Year	Low	Mid	High	Aggressive	Bookend
2025	1.7	2.2	2.8	3.5	3.6
2030	2.5	3.7	5.6	7.7	7.8
2035	3.1	5.4	8.3	12.4	12.9

# Battery Electric Vehicle Stock



Source: CEC Staff.

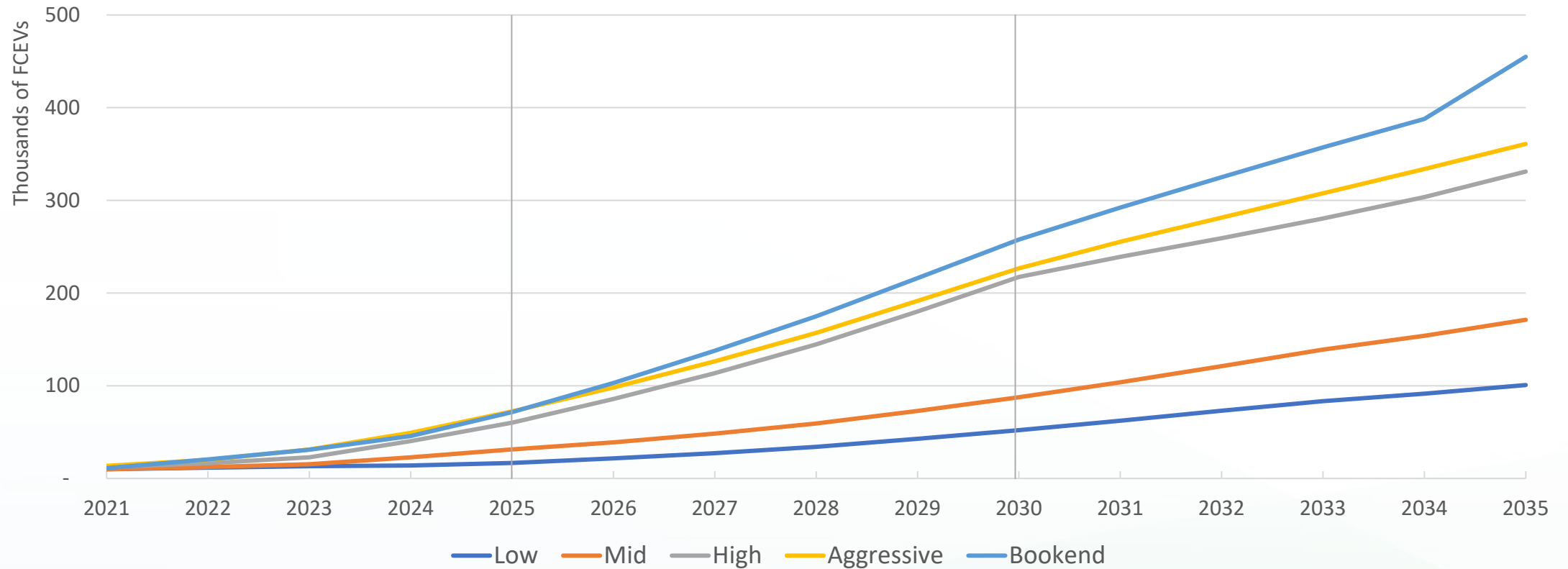
# Plug-in Hybrid Vehicle Stock



Source: CEC Staff.

# Fuel Cell Electric Vehicle Stock

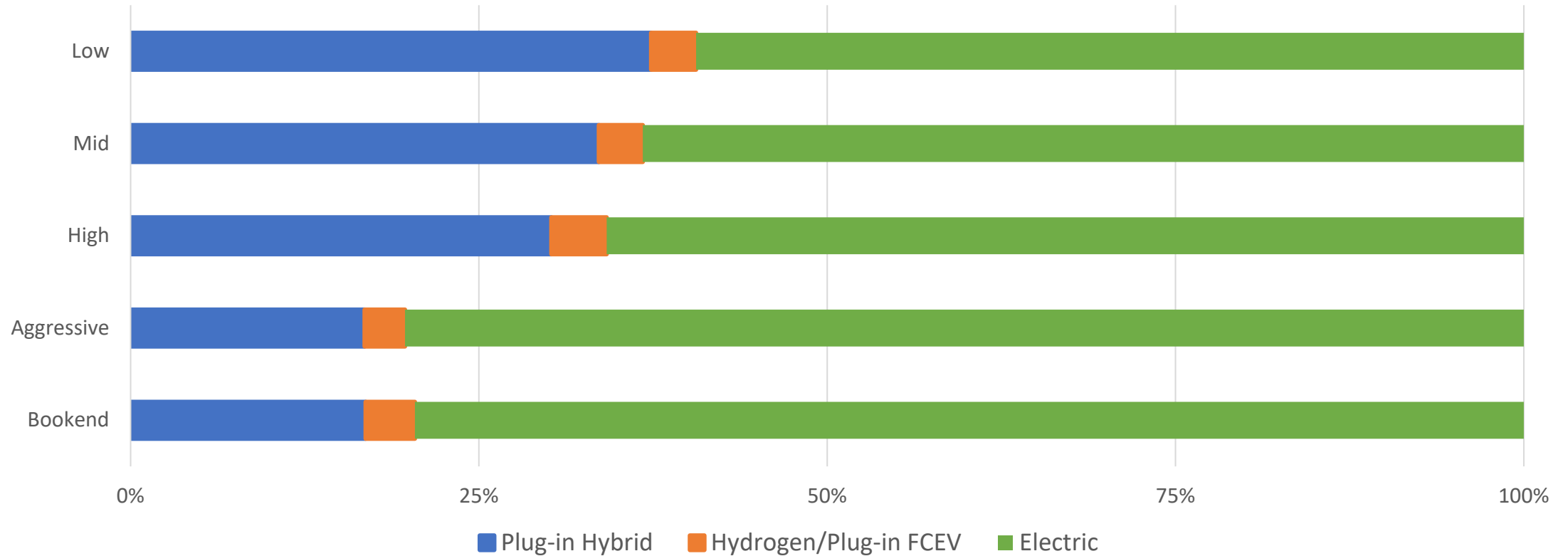
Forecasted Light-Duty FCEV Stock, 2021-2035



Includes plug-in hybrid FCEVs. Source: CEC Staff.

# Significantly fewer PHEVs in Aggressive and Bookend Cases

ZEV + PHEV Fleet Fuel Distribution by Scenario, 2035



Source: CEC Staff.





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# Appendix



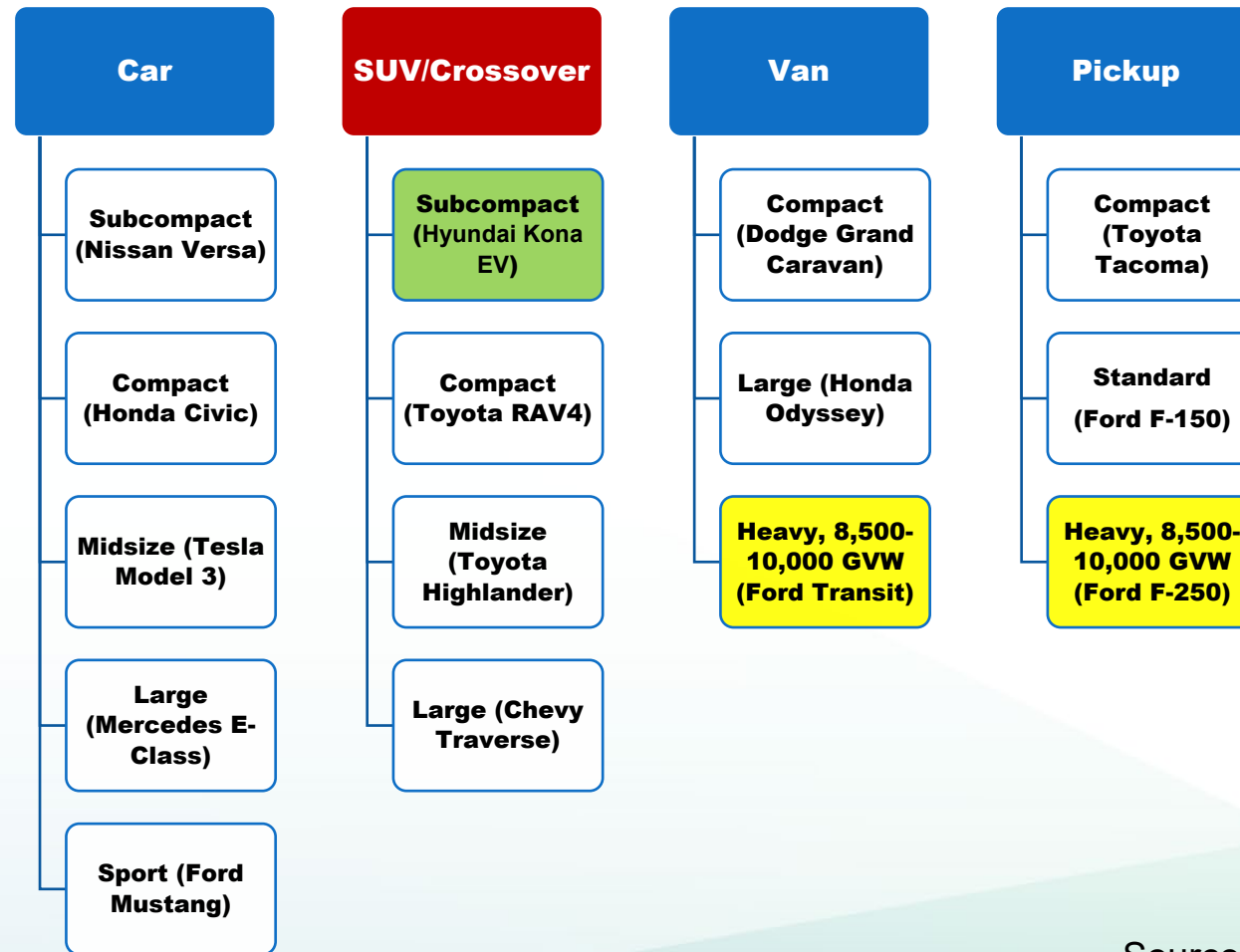
# Transportation Energy Demand Cases

*Demand cases represent different levels of transportation electricity demand*

Demand Case	Population	Income	Petroleum Fuel Prices	Electricity, Natural Gas, and Hydrogen Prices
High Demand	High	High	High	Low
Mid	Mid	Mid	Mid	Mid
Low Demand	Low	Low	Low	High



# Light Duty Vehicle Classes: 15 New Classes in Standard & Luxury vs 18 Legacy Classes

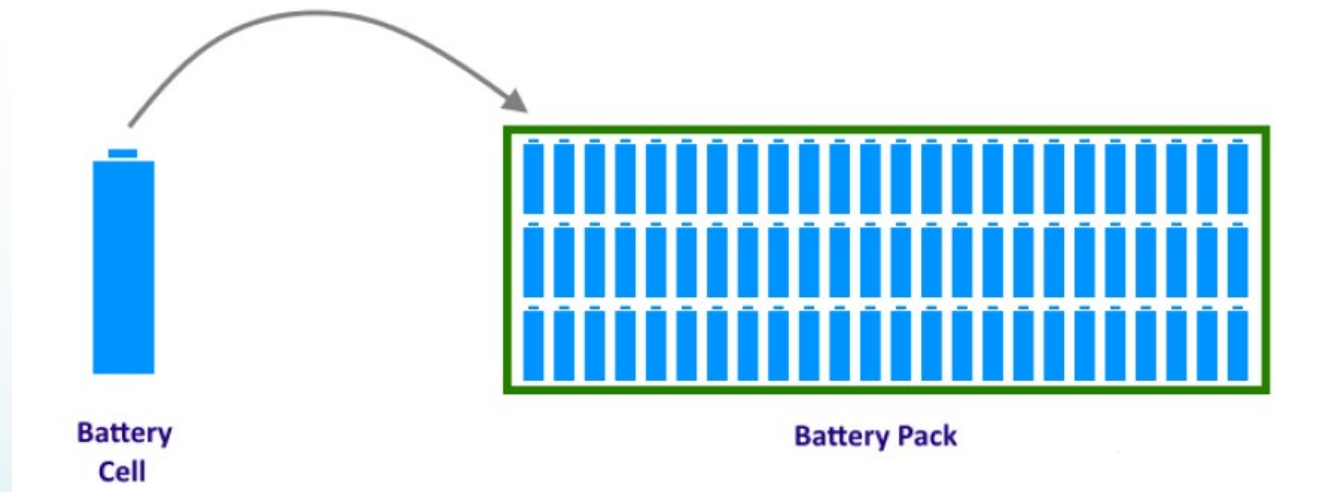


Source: CEC staff



# Battery price background information

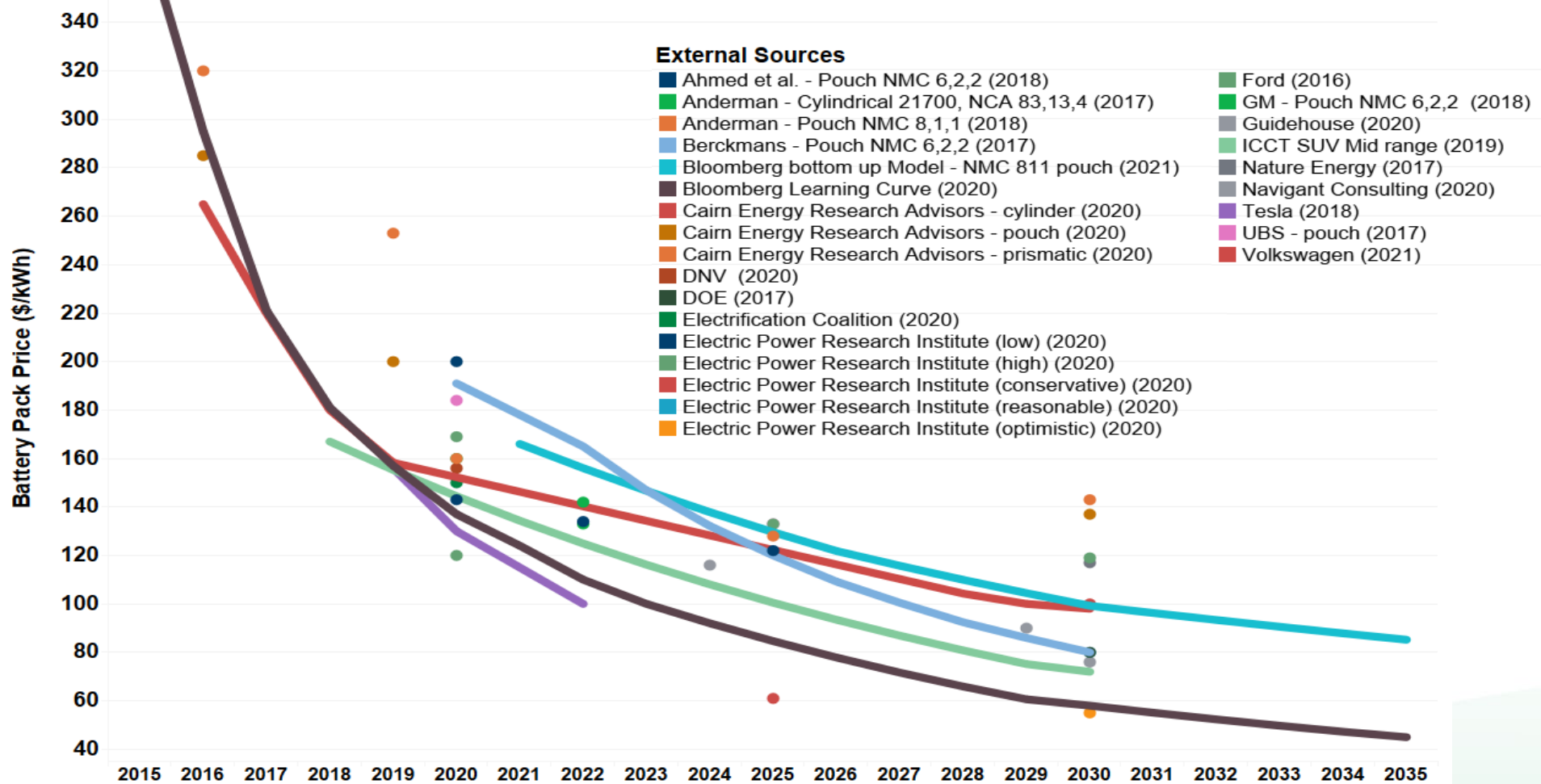
- Scenarios based on estimates from publicly available battery price forecasts
- Lithium-ion batteries only (no solid-state battery or other battery chemistry)
- Prices shown are for battery packs (\$/kWh), not battery cells



Source: CEC Staff



# Battery Price Estimates from External Sources





# CEC Battery Price Scenarios

